Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled): In a method adapted to provide a pressurized gas stream useful for removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the improvement which comprises:

a) establishing an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium containing unreacted urea, biuret and/or ammonium carbamate;

b) separating the gaseous product stream at a controlled pressure and flow rate;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor, a urea dissolver, or the feed solution to

the reactor for further conversion; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it for external use at a controlled rate which is approximately the amount necessary to the demands of said external use in removing said nitrogen oxides.

Claim 2 (canceled): The method of claim 1 wherein the aqueous solution contains weight of solids about 1% to 76%.

Claim 3 (canceled): The method of Claim 1-Step a) in which the gaseous products of the hydrolysis reaction and the liquid reaction media are withdrawn from the reactor as a mixed gas and liquid stream; following which

a) The gaseous ammonia and carbon dioxide products formed are separated from the liquid reaction media while under the operating pressure in a separation device;

b) Recycling the liquid phase reaction media from the separation device back into the reaction media, urea dissolver, or urea feed solution for further conversion of unreacted urea, biuret and intermediate ammonium carbamate therein; and

c) Withdrawing the gaseous ammonia and carbon dioxide product formed in Step a) for an external use at said controlled rate.

Claim 4 (canceled): The method of claim 1 in which the hydrolysis reaction is carried out under non-catalytic conditions and the rate of production of ammonia is controlled thermally and by the quantity of solution in the reactor.

Claim 5 (canceled): The method of Claim 1 in which the reaction rate to form the gaseous ammonia-containing product is enhanced by inclusion in the reaction media of a composition which increases the rate of the hydrolysis of urea and biuret and is selected from the following:

a) Oxides or ammonium or alkali metal salts or hydroxides of elements in Groups III-B, IV, V and VI-A of the Periodic Chart Of The Elements, or the hydroxides, carbonates or bicarbonates of Group I;

b) Ion-exchange resins of the acidic or basic types, and

c) Activated carbon, silica or alumina.

Claim 6 (canceled): The method of claim 1 wherein the liquid contents of the reactor is held at an essentially constant volume.

Claim 7 (canceled): The method of Claim 1 wherein said concentration range is from about 10% to 76% solids.

Claim 8 (canceled): The method of Claim 1 in which the conditions of operation are carried out within the temperature range of about 110°C to about 300°C and pressure range of about 20 PSIG to about 500 PSIG.

Claim 9 (canceled): The method of Claim 1 in which the gaseous ammonia and carbon dioxide product being discharged are maintained at a temperature above 60°C.

Claim 10 (canceled): The method of Claim 1 in which said external use of the ammonia in the product ammonia and carbon dioxide produced is for removing nitrogen oxides from combustion gas streams by SNCR (Selective Non-Catalytic Reduction or SCR (Selective Catalytic Reduction) processes.

Claim 11 (canceled): The method of Claim 1 in which said external use of ammonia in the gaseous product ammonia and carbon dioxide produced is for the removing particulate matter from combustion gas streams by conditioning the particulate matter for improved removal by electrostatic precipitators or fabric filters.

Claim 12 (canceled): The method of Claim 1 in which a portion of the water vapor in the ammonia and carbon dioxide product stream leaving the reactor is removed by cooling the product gas stream in a condenser while under pressure.

Claim 13 (canceled): The method of Claim 12 in which the water removed from the gaseous ammonia and carbon dioxide gaseous product stream is recovered and recycled back to the hydrolysis reactor or used to replace water used in the preparation of the urea feed solution.

Claim 14 (canceled): The method of Claim 12 in which the urea feed solution is used as the coolant to the condenser, following which the heated solution is delivered to the hydrolysis reactor.

Claim 15 (canceled): The method of Claim 12 in which the pressure within the reactor is monitored and controlled by the gas phase pressure, and gas phase pressure gauge, control valve and connection lines are provided and are heated to above 60°C.

Claim 16 (canceled): The method of Claim 15 in which the pressure within the reactor is monitored and controlled by the liquid phase pressure, the pressure gauge and connection line being at a temperature from ambient to the temperature of the reactor solution.

Claim 17 (canceled): The method of Claim 1 in which an emergency pressure relief valve is connected to a tank containing water, said tank containing sufficient cold water to cool the reactor solution discharge to stop the hydrolysis process.

Claim 18 (canceled): The method of Claim 10 in which a reactor discharge control valve is provided and is regulated to provide a controlled flow rate of the gaseous ammonia and carbon dioxide product stream which matches the amount of nitrogen oxides in said combustion gas streams.

Claim 19 (canceled): The method of Claim 11 in which said reactor discharge control valve is regulated to provide a controlled flow rate of the gaseous ammonia and carbon dioxide product stream for conditioning the combustion gas to provide improved collection of particulate matter in said combustion gas streams.

Claim 20 (canceled): The method of Claim 1 in which the product ammonia and carbon dioxide gas stream is mixed with a dilution gas, said dilution gas being comprised of air, steam or flue gas, or mixtures thereof, prior to said external use.

Claim 21 (canceled): The method of Claim 10 in which the heat required for the hydrolysis reaction is derived from said hot combustion gas streams.

Claim 22 (canceled): The method of Claim 20 in which the dilution gas is heated prior to said external use.

Claim 23 (canceled): A method for producing a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the process comprising;

a) establishing an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid

phase reaction medium containing unreacted urea, biuret and/or ammonium carbamate;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor, a urea dissolver, or the feed solution to the reactor for further conversion; and

d) withdrawing the gaseous ammonia containing product stream and feeding it, while maintaining its temperature above 60°C, at a controlled pressure and rate of flow for said external use.

Claim 24 (canceled): A method for producing a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the process comprising;

a) establishing an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium containing unreacted urea, biuret and/or ammonium carbamate;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor, a urea dissolver, or the feed solution to the reactor for further conversion; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it, while maintaining its temperature above 60°C, for external use at a controlled pressure and controlled rate which is approximately the amount necessary to meet the demand of said external use.

Claim 25 (canceled): A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20-500 psig to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), and (ii) a residual liquid phase reaction medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 26 (canceled): A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20-500 psig and at temperatures sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the temperature being in the range of at least 110° C. up to about 300° C., and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 27 (canceled): A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the pressure being in the range of about 20-500 psig, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 28 (canceled): A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20-500 psig and at temperature sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for external use in step d), the solids content of said aqueous solution being from about 1% to 76% by weight, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase reaction medium;

c) retaining the residual liquid phase reaction medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 29 (canceled): A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at pressures of about 20-500 psig and at temperature sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the rate of ammonia production being controlled by the concentration of urea in the reactor, the solids content of said aqueous solution being from about 1% to 76% by weight, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor, and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 30 (canceled): The method of Claim 25 wherein:

a) the gaseous ammonia and carbon dioxide formed in step a) are separated from the residual liquid phase medium while under the operating pressure in a separation device; and

b) the residual liquid phase medium is recycled from the separation device back into the reactor, or urea dissolver, for further conversion of any unreacted urea, biuret and intermediate ammonium carbamate therein.

Claim 31 (canceled): The method of claim 25, 26, 27, 28 or 29 wherein the demand is for removal of only a portion of the nitrogen oxides.

Claim 32 (canceled): The method of claim 29 in which the hydrolysis reaction is carried out under non-catalytic conditions.

Claim 33 (canceled): The method of claim 29 in which the reaction rate to form the gaseous ammonia-containing product is enhanced by inclusion in the aqueous solution of a composition which increases the rate of the hydrolysis of urea and is selected from the following:

a) Oxides or ammonium or alkali metal salts or hydroxides of elements in Groups III-B, IV, V and VI-A of the Periodic Chart Of The Elements, or the hydroxides, carbonates or bicarbonates of Group I;

b) Acidic or Basic Ion-exchange resins, and

c) Activated carbon, silica or alumina.

Claim 34 (canceled): The method of claim 25, 26, 27, 28 or 29 wherein the aqueous solution in the reactor is held at an essentially constant volume.

Claim 35 (canceled): The method of claim 29 wherein said solids content in the reactor is from about 10% to 76% solids.

Claim 36 (canceled): The method of claim 25, 26, 27, 28 or 29 in which the conditions of operation in the reactor are carried out within the temperature range of about 110°C. to about 180°C., pressure range of about 20 PSIG-500 PSIG, and the residual liquid phase medium contains urea.

Claim 37 (canceled): The method of claim 36 wherein the residual liquid phase medium is recycled back into the reactor or urea dissolver for further hydrolysis of the urea therein.

Claim 38 (canceled): The method of claim 29 in which the gaseous ammonia and carbon dioxide product being discharged are maintained at a temperature above 60°C.

Claim 39 (canceled): The method of claim 29 in which said external use of the ammonia in the product ammonia and carbon dioxide produced is for removing nitrogen oxides from combustion gas streams by SNCR (Selective Non-Catalytic Reduction or SCR (Selective Catalytic Reduction) processes.

Claim 40 (canceled): The method of claim 29 in which a portion of the water vapor in the ammonia and carbon dioxide product stream leaving the reactor is removed by cooling the product gas stream in a condenser while under pressure.

Claim 41 (canceled): The method of claim 40 in which the water removed from the gaseous ammonia and carbon dioxide gaseous product stream is recovered and recycled back to the reactor or used to replace water used in the preparation of the urea solution.

Claim 42 (canceled): The method of claim 40 in which the urea solution is used as the coolant to the condenser, following which the heated solution is delivered to the reactor.

Claim 43 (canceled): The method of claim 40 in which the pressure within the reactor is monitored and controlled by the gas phase pressure, and gas phase pressure gauge, control valve and connection lines are provided and are heated to above 60°C.

Claim 44 (canceled): The method of claim 43 in which the pressure within the reactor is monitored and controlled by the liquid phase pressure, the pressure gauge and connection line being at a temperature from ambient to the temperature of the reactor solution.

Claim 45 (canceled): The method of claim 29 in which an emergency pressure relief valve is connected to a tank containing water, said tank containing sufficient cold water to cool the reactor solution discharge to stop the hydrolysis reaction.

Claim 46 (canceled): The method of claim 39 in which a reactor discharge control valve is provided and is regulated to provide a controlled flow rate of the gaseous ammonia and carbon dioxide product stream which matches the amount of nitrogen oxides in said combustion gas streams.

Claim 47 (canceled): The method of claim 29 in which the product ammonia and carbon dioxide gas stream is mixed with a dilution gas, said dilution gas being comprised of air, steam or flue gas, or mixtures thereof, prior to said external use.

Claim 48 (canceled): The method of claim 37 in which the heat required for the hydrolysis reaction is derived from said hot combustion gas streams.

Claim 49 (canceled): The method of claim 29 in which the aqueous solution in the reactor is formed by mixing urea with water and feeding the solution to the reactor.

Claim 50 (canceled): A method adapted to provide a pressurized gas stream useful for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a

residual liquid phase reaction medium;

b) separating the gaseous product stream at a controlled pressure and flow rate;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it for external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides.

Claim 51 (canceled): A method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a fan, residual liquid phase reaction medium;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia containing product stream and feeding it, while maintaining its temperature above 60°C., at a controlled pressure and rate of flow for said external use.

Claim 52 (canceled): A method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use, in step d), and a residual liquid phase medium;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the residual liquid phase medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction liquid phase medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it, while maintaining its temperature above 60°C., for external use at a controlled pressure and controlled rate which is approximately the amount necessary to meet the demand of said external use.

Claim 53 (canceled): The method of claims 1, 23, 24, 50, 51 or 52 wherein pressure in the reactor is within the range of about 20 psig-500 psig.

Claim 54 (canceled): In the method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium containing unreacted urea, biuret and/or ammonium carbamate;

b) separating the gaseous product stream at a controlled pressure and flow rate;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the liquid phase reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia containing product stream and feeding it at a controlled pressure and rate of flow for said external use;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.

Claim 55 (canceled): In the method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium containing unreacted urea, biuret and/or ammonium carbamate;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the liquid phase reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it, while maintaining its temperature above 60°C, for external use at a controlled pressure and controlled rate which is approximately the amount necessary

to meet the demand of said external use;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor..

Claim 56 (currently amended): ~~In the~~ A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20 - 500 psig to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the rate of production of ammonia being controlled thermally and by the quantity of solution in the reactor, and (ii) a residual liquid phase reaction medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides;~~-~~

~~the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.~~.

Claim 57 (currently amended): ~~In the~~ A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20 - 500 psig and at temperatures sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the rate of production of ammonia being controlled thermally and by the quantity of solution in the reactor, the temperature being in the range of at least 110° C up to about 300° C, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides;~~-~~

~~the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor~~.

Claim 58 (currently amended): ~~In the~~ A method adapted to provide a pressurized gas stream for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressure of about 20 - 500 psig and at temperatures ~~and pressures~~ sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the rate of production of ammonia being controlled thermally and by the quantity of solution in the reactor, the ~~pressure being in the range of about 20-500 psig~~ solids content of said aqueous solution being from about 1% to 76% by weight, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides~~;~~

~~the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor~~.

Claim 59 (currently amended): ~~In the~~ A method adapted to provide a pressurized gas stream for an external use in a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein under pressures of about 20 - 500 psig and at temperature sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for external use in step d), the rate of production of ammonia being controlled thermally and by the quantity of solution in the reactor, the temperature being in the range of at least 110°C to about 300°C, the solids content of said aqueous solution being from about 1% to 76% by weight, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase reaction medium;

c) retaining the residual liquid phase reaction medium in the reactor and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides;

~~the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor~~.

Claim 60 (canceled): In the method adapted to provide a pressurized gas stream for an external use, the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at pressures of about 20 - 500 psig and at temperature sufficient to produce: (i) a gaseous product stream of ammonia, carbon dioxide and water sufficient for the external use in step d), the rate of ammonia production being controlled by the concentration of urea in the reactor, the solids content of said aqueous solution being from about 1% to 76% by weight, and (ii) a residual liquid phase medium;

b) separating the gaseous product stream from said residual liquid phase medium;

c) retaining the residual liquid phase medium in the reactor, and/or recycling at least a portion of the residual liquid phase medium back into the reactor or a urea dissolver; and

d) feeding the separated gaseous product and stream for the external use at a controlled rate which is approximately the amount necessary to the demand of said external use;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.

Claim 61 (original): The method of Claim 56 wherein:

a) the gaseous ammonia and carbon dioxide formed in step a are separated from the residual liquid phase medium while under the operating pressure in a separation device; and

b) the residual liquid phase medium is recycled from the separation device back into the reactor, or urea dissolver, for further conversion of any unreacted urea, biuret and intermediate ammonium carbamate therein.

Claim 62 (currently amended): The method of claim 56, 57, 58, or 59 ~~or 60~~ wherein the demand is for removal of only a portion of the nitrogen oxides.

Claim 63 (currently amended): The method of claim ~~60~~ 56 in which the hydrolysis reaction is carried out under non-catalytic conditions.

Claim 64 (currently amended): The method of Claim ~~60~~ 56 in which the reaction rate to form the gaseous ammonia-containing product is enhanced by inclusion in the aqueous solution of a composition which increases the rate of the hydrolysis of urea and is selected from the following:

a) Oxides or ammonium or alkali metal salts or hydroxides of elements in Groups III-B, IV, V and VI-A of the Periodic Chart Of The Elements, or the hydroxides, carbonates or bicarbonates of Group I;

b) Acidic or Basic Ion-exchange resins, and

c) Activated carbon, silica or alumina.

Claim 65 (currently amended): The method of claim 56, 57, 58, or 59 ~~or 60~~ wherein the aqueous solution in the reactor is held at an essentially constant volume.

Claim 66 (currently amended): The method of Claim ~~60~~ 56 wherein said solids content in the reactor is from about 10% to 76% solids.

Claim 67 (currently amended): The method of Claim 56, 57, 58, or 59 ~~or 60~~ in which the conditions of operation in the reactor are carried out within the temperature range of about 110°C to about 180°C, pressure range of about 20 PSIG - 500 PSIG, and the residual liquid phase medium contains urea.

Claim 68 (original): The method of Claim 67 wherein the residual liquid phase medium is recycled back into the reactor or urea dissolver for further hydrolysis of the urea therein.

Claim 69 (currently amended): The method of Claim ~~60~~ 56 in which the gaseous ammonia and carbon dioxide product being discharged are maintained at a temperature above 60°C.

Claim 70 (canceled): The method of Claim 60 in which said external use of the ammonia in the product ammonia and carbon dioxide produced is for removing nitrogen oxides from combustion gas streams by SNCR (Selective Non-Catalytic Reduction or SCR (Selective Catalytic Reduction) processes.

Claim 71 (currently amended): The method of Claim ~~60~~ 56 in which a portion of the water vapor in the ammonia and carbon dioxide product stream leaving the reactor is removed by cooling the product gas stream in a condenser while under pressure.

Claim 72 (original): The method of Claim 71 in which the water removed from the gaseous ammonia and carbon dioxide gaseous product stream is recovered and recycled back to the reactor or used to replace water used in the preparation of the urea solution.

Claim 73 (original): The method of Claim 71 in which the urea solution is used as the coolant to the condenser, following which the heated solution is delivered to the reactor.

Claim 74 (currently amended): The method of Claim ~~60~~ 56 in which the pressure within the reactor is monitored and controlled by the gas phase pressure, and gas phase pressure gauge, control valve and connection lines are provided and are heated to above 60°C.

Claim 75 (original): The method of Claim 74 in which the pressure within the reactor is monitored and controlled by the liquid phase pressure, the pressure gauge and connection line being at a temperature from ambient to the temperature of the reactor solution.

Claim 76 (currently amended): The method of Claim ~~60~~ 56 in which an emergency pressure relief valve is connected to a tank containing water, said tank containing sufficient cold water to cool the reactor solution discharge to stop the hydrolysis reaction.

Claim 77 (currently amended): The method of Claim ~~70~~ 56 in which a reactor discharge control valve is provided and is regulated to provide a controlled flow rate of the gaseous ammonia and carbon dioxide product stream which matches the amount of nitrogen oxides in said combustion gas streams.

Claim 78 (currently amended): The method of Claim ~~60~~ 56 in which the product ammonia and carbon dioxide gas stream is mixed with a dilution gas, said dilution gas being comprised of air, steam or flue gas, or mixtures thereof, prior to said external use.

Claim 79 (currently amended): The method of Claim ~~68~~ 56 in which the heat required for the hydrolysis reaction is derived from said hot combustion gas streams.

Claim 80 (currently amended): The method of Claim ~~60~~ 56 in which the aqueous solution in the reactor is formed by mixing urea with water and feeding the solution to the reactor.

Claim 81 (canceled): In the method adapted to provide a pressurized gas stream useful for an external use in removing nitrogen oxides from a combustion gas stream by SNCR (Selective Non-Catalytic Reduction), or SCR (Selective Catalytic Reduction), the method comprising:

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium;

b) separating the gaseous product stream at a controlled pressure and flow rate;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it for external use at a controlled rate which is approximately the amount necessary to the demand of said external use in removing said nitrogen oxides;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.

Claim 82 (canceled): In the method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea,

biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase reaction medium;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the liquid phase reaction medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia containing product stream and feeding it, while maintaining its temperature above 60°C, at a controlled pressure and rate of flow for said external use;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.

Claim 83 (canceled): In the method for producing for external use a gaseous ammonia-containing product from urea, or mixtures of urea containing biuret and/or ammonium carbamate, said ammonia-containing product being essentially free of urea, biuret, or ammonium carbamate, the method comprising;

a) establishing in a reactor an aqueous solution of urea or mixtures of urea containing biuret and/or ammonium carbamate, and hydrolyzing the urea therein at temperatures and pressures sufficient to produce a gaseous product stream of ammonia, carbon dioxide and water at a rate sufficient for external use in step d), and a residual liquid phase medium;

b) separating the gaseous product stream at a controlled pressure and flow rate while maintaining its temperature above 60°C.;

c) retaining the residual liquid phase medium in the reactor for further conversion to gaseous ammonia and carbon dioxide, and/or recycling at least a portion of the reaction liquid phase medium back into the reactor or a urea dissolver; and

d) withdrawing the gaseous ammonia and carbon dioxide-containing product stream and feeding it, while maintaining its temperature above 60°C, for external use at a controlled pressure and controlled rate which is approximately the amount necessary to meet the demand of said external use;

the improvement wherein the ammonia production rate is governed by the concentration of urea in the reactor.

Claim 84 (canceled): The method of claims 54, 55, 81, 82 or 83 wherein pressure in the reactor is within the range of about 20 psig - 500 psig.